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FLUID EXTRACT AND SYRUP OF IPECACUANHA.

By Alonzo Robbins.

There has been a general complaint of the present officinal fluid extract of ipecacuanha, principally that the syrup made by mixing it with simple syrup is not clear, and separates a flocculent precipitate on standing. For a number of years I have used a formula for the syrup similar to the one given in this paper, and it has always yielded a transparent preparation which has been kept unchanged for three or four years.

In the Proceedings of the American Pharmaceutical Association for 1877, page 411, Mr. J. U. Lloyd suggested a formula for fluid extract, based on the formula of the U. S. Pharmacopœia of 1860. This suggestion I have followed in the first formula given in this paper, the ipecacuanha used in all these experiments was in No. 80 powder, but I think that the fine powdered drug of the market would have answered equally well; parts by weight were used throughout:

Take of	Ipecacuanha, in powder No. 80,	100 parts
	Acetic acid,	6 "
	Alcohol, s. g. ·822	
	Water,	each a sufficient quantity

Moisten the ipecacuanha with 39 parts of alcohol and pack it firmly in a cylindrical percolator, pour alcohol upon it and allow the percolation to proceed slowly until the ipecacuanha is exhausted. To the percolate add the acetic acid and 50 parts of water, evaporate by means of a water-bath until it is reduced to 50 parts; when cold add 50 parts of water, let stand twelve hours and filter, evaporate the filtrate to 50 parts and add 50 parts of alcohol. The specific gravity of this fluid extract is ·944 at 70°F., and it contains 11 per cent. of dry extract. When this fluid extract is mixed with simple syrup it

forms a perfectly transparent syrup, and which, after standing nearly a year, shows only a very slight precipitate. But as the whole of the percolate is twice subjected to the action of heat during the process I suggest the following formulas for the fluid extract, in one of which the dilute percolate only is evaporated, and in the other no heat whatever is employed; the use of acetic acid is also avoided.

By simple percolation 100 parts of ipecacuanha are treated with a menstruum composed of 3 parts of alcohol, s. g. ·822, and 1 part water, =s. g. ·8798, the first 75 parts of percolate are reserved, the percolation continued to exhaustion, the dilute percolate evaporated on a water-bath to the consistence of a soft extract, which is dissolved in sufficient of the menstruum to make 25 parts, and then added to the reserved portion. The specific gravity of this fluid extract is ·942 at 70°F., and it contains 20 per cent. of dry extract.

Using the same menstruum, another fluid extract was prepared by repercolation as follows: 400 grams of ipecacuanha were taken, and divided into three equal portions; the first portion was moistened, packed and macerated as in simple percolation, and the percolate taken in portions of about 100 grams; from this portion none of the percolate was reserved. The second portion was treated with the percolates from the first, using them in the order in which they were obtained; from this portion the first 134 grams of percolate was reserved. The third portion was treated with the dilute percolates from the second portion, in their regular order; from this portion the first 266 grams of percolate was reserved and mixed with the 134 grams reserved from the second portion, forming the 400 grams of fluid extract. The specific gravity of this fluid extract is ·938 at 70°F., and it contains 18 per cent. of dry extract, showing a loss by this process of 2 per cent. of the dry extract. The percolation was continued until the ipecacuanha was thoroughly exhausted; this percolate was carefully evaporated and finally dried on a watch-glass, yielding 1·63 per cent. of dry extract, and bringing the total amount to 19·63 per cent., only ·37 per cent. less than was obtained by simple percolation. In the practical working of this formula all loss could be avoided by setting aside the reserve percolate from the third portion when a few grams short of the required quantity, and then continuing the percolation to exhaustion, evaporating this weak percolate to a soft extract, dissolving it in sufficient of the

menstruum to make up the required quantity, and then adding it to the reserved percolates.

Neither of these fluid extracts will yield a transparent preparation when mixed with simple syrup, but by the following process a syrup may be made from either, which will be perfectly transparent, and will keep indefinitely.

Syrup of Ipecacuanha.

Take of	Fluid extract of ipecacuanha,	5 parts.
	Glycerin,	25 "
	Sugar,	50 "
	Water,	a sufficient quantity.

Add the fluid extract to 18 parts of water and filter, when the filtrate ceases to drop add 2 parts of water through the filter, dissolve the sugar in the filtrate at about 120° F., and strain while warm into a tared bottle containing the glycerin, then make up the quantity to 100 parts with water. The specific gravity of this syrup is 1·272 at 70° F.

For the purpose of this experiment, the parts used were grams; the 100 grams of syrup measured 21 fluidrachms, and contained 77·161 grains of ipecacuanha; and as the present officinal formula contains 3·75 grains in the fluidrachm, the 21 fluidrachms obtained by the above process are 1·589 grains short of the officinal quantity

A transparent, and possibly permanent, syrup might be made by the above method, omitting the glycerin and adding more sugar and water; but the use of glycerin in this syrup has been long ago recommended by various writers, and it really seems to possess valuable preservative properties, without being in the least degree therapeutically objectionable.

AROMATIC SULPHURIC ACID.

By Phil. Hoglan, Ph.G.

In making this preparation according to the present United States Pharmacopœia process I invariably get a precipitate on mixing the tincture of the aromatics with the diluted acid. As nearly all preparations containing cinnamon are apt to form a deposit on standing for a time, I concluded that the precipitate in the elixir of vitriol was owing, in part at least, to the presence of cinnamon, and on a suggestion found in a recent publication, was induced to substitute the oil of cinnamon for the powdered bark, directed in the formula. The process was as follows:

℞	Sulphuric acid, . . .	six troyounces.
	Powdered ginger, . .	one troyounce.
	Oil cinnamon, . . .	eight minims.
	Alcohol, . . .	q. s.

Mix the oil of cinnamon with a pint of alcohol, and percolate the ginger with the mixture until one pint of tincture is obtained. Add this tincture to the sulphuric acid, previously mixed with a pint of alcohol, and allowed to cool. This made a mixture of a beautiful brown color, and very little deposit occurred, even after two weeks' standing, while in using the powdered cinnamon in the process, I have always had a precipitate *immediately* on mixing the diluted acid and the tincture. I, therefore, concluded that the deposit in question was owing, in a great measure, to the use of powdered cinnamon in the process, and as the substitution of the oil seems to give a preparation having all the medicinal properties required without the unsightly deposit, I would recommend the change in our next Pharmacopœia.

Newcomerstown, O., July 10th, 1879.

NOTE BY THE EDITOR.—A similar change was proposed by Mr. Thomas N. Jamieson in 1867 ("Amer. Jour. Phar.," 1867, p. 201), whose formula, as published, calls for oil of cinnamon, 12 minims; tincture of ginger, 2 fluidounces: alcohol, 24 fluidounces, and sulphuric acid, 6 troyounces. This, however, does not give the full amount of ginger. A preparation more nearly representing the officinal one would be obtained as follows: Add 6 troyounces of sulphuric acid gradually to a pint of alcohol, and allow the liquid to cool; mix 10 or 12 minims of oil of cinnamon, 4 fluidounces of tincture of ginger and 28 fluidounces of alcohol, and add to this the diluted acid. Thus prepared, aromatic sulphuric acid is of a lighter color than the officinal, owing to the absence of coloring matter, etc., derived from cinnamon.

AN AID TO THE CORRECT NUMBERING OF PRESCRIPTIONS.

BY H. BOWMAN.

It is so common an occurrence to number prescriptions incorrectly, and to have the error continued through several days or weeks before discovery, that I, some years ago, adopted a simple device which costs nothing and has proved entirely satisfactory. There are several advan-

tages to this method. An error in numbering a prescription is not repeated in the next. In a large establishment, where several dispensers are at work, there is no confusion; each one registers his numbers and fills as many spaces as he has prescriptions for, and his numbers are all consecutive. The prescription file is not exposed to observation; the prescriptions can be thrown into a small drawer until they are removed and pasted in the scrap book.

My plan is to have a narrow book, say seven by three inches, containing about a hundred leaves. I take an unused prescription book for the purpose. I then rule six upright lines, about an inch apart. On the top line of each space I write, in red ink, the numbers of the prescriptions to be filled, all except the unit, which is filled out by the dispenser from the naught at the top to the nine at the bottom of each space. When the page is filled it is torn off at the perforation. Below is a copy of one of my pages. It will be seen that the last number filled is 38,556.

	38,530	38,540	38,550	39,56	38,57	38,58	38,59
	1	1	1				
	2	2	2				
	3	3	3				
	4	4	4				
	5	5	5				
	6	6	6				
	7	7					
	8	8					
	9	9					

ON SOME CONSTITUENTS OF CORNUS FLORIDA.

By ANDREW G. FREY, Ph.G.

From an Inaugural Essay.

The bark of the tree is the officinal portion, obtained both from the stem and root, that of the latter being the best. It is tonic, astringent and antiperiodic. Although little used at present, it doubtless deserves more attention in intermittent fevers, especially in the milder stages.

The object of my experiments was mainly the isolation of the bitter principle.

Two pounds of the ground stem bark, collected early in March, were macerated and percolated with water. The percolate, being of a bright red color, bitter and astringent taste, turned to a dense blackish-blue color on the addition of solution of perchloride of iron, indicating the presence of tannin. The infusion was detannated by agitating with freshly precipitated hydrate of lead until no change of color was produced on the addition of perchloride of iron, then filtered and evaporated over a low heat to a soft extract, very dark in color, and at first sweetish and afterwards bitter taste, very soluble in water and alcohol, and having an acid reaction on test-paper. The extract was treated with a mixture of two parts alcohol and one of strong ether for a few days; the liquid decanted from the residue was of a yellowish color, acid reaction, and sweetish then bitter taste. It was concentrated by distillation until about a fluidounce of the liquid remained behind, which was carefully evaporated and yielded a soft extract, similar to the former in taste and color. This was again dissolved in strong alcohol, mixed with ether until slightly turbid, and the filtrate left to spontaneously evaporate, yielding again an extract-like mass.

The residue of the original aqueous extract left after treatment with alcohol and ether was now treated with strong alcohol; the filtrate being very dark colored, bitter and of an acid reaction, was concentrated by distillation and then evaporated spontaneously, yielding an extract similar to the preceding portion, to which it was added, and treated with a mixture of equal bulks of alcohol and ether. A reddish syrup subsided, having a very sweet taste, and proving to be a solution of sugar. The lighter liquid was decanted into an evaporating dish, and after spontaneously evaporating yielded a dark bitterish extract, lacking sweetness to taste.

One pound of the well-dried powder, previously exhausted with water, was percolated with strong alcohol, and yielded a tincture of a dark color and somewhat bitterish and astringent taste. It was detannated by hydrate of lead, the filtrate freed from lead by sulphuretted hydrogen, then concentrated by distillation and allowed to evaporate spontaneously. Yellowish feathery crystals separated, but after complete evaporation a deep yellow granular resinous mass, of a slightly bitterish taste, was left. Washing with water rendered it tasteless and nearly colorless; it was freely soluble in alcohol and ether, and on spontaneous evaporation was left in an amorphous condition. It dissolves partly in caustic potassa, the dissolved portion being reprecipitated by acids. The resin is fusible, is slightly colored by cold nitric acid, oxidized by hot nitric acid, not dissolved by hydrochloric acid, and dissolves in cold sulphuric acid with an orange color, becoming blackish on heating.

The powder exhausted by water and alcohol was percolated with benzin, yielding a yellowish liquid, not affected by perchloride of iron, and on evaporation leaving an orange-yellow fixed oil, of a bland taste and no odor.

The experiments on the bark of the root collected in April were as follows:

One and a half pound of the ground bark was macerated and percolated with water. The percolate was of a much deeper red color, and of a more bitter and astringent taste than the infusion from the bark of the stem. It was detannated with hydrate and oxide of lead, and filtered; the filtrate was of a yellowish color, slightly acid and very bitter, and on evaporation left a soft, brownish extract, exceedingly bitter, which was treated with strong alcohol until the residue was wholly or almost destitute of bitter taste, and only a gummy mass remained. The alcohol solution was then divided into two portions. One was transferred into a beaker glass and left to evaporate spontaneously, when bitter crystals of *cornin*, with some coloring matter, were deposited on the sides of the vessel. The other portion was precipitated with subacetate of lead and filtered, filtrate freed from lead by passing sulphuretted hydrogen through it, filtered, and evaporated spontaneously, and then shaken with a mixture of strong alcohol and ether, about one part to seven, to separate sugar and coloring matter, and after standing a day decanted into an evaporating dish and left to evaporate, when

whitish silky-like crystals of *cornin* were left, together with some coloring matter.

The crystals formed in the beaker from alcohol solution were then treated by the same method as the latter portion, and the crystalline mass left was added to the other, dissolved in sufficient strong alcohol, and the solution mixed with three parts of pure ether; after standing a day the clear solution was decanted from the sediment and left to evaporate. The treatment with alcohol and ether had to be repeated several times in order to obtain the crystals of *cornin* with only a small amount of coloring matter.

A portion of the impure crystals was dissolved in sufficient strong alcohol and kept in a corked wide-mouth bottle, when the cornin crystallized out in white silky crystals, which were removed and dried on bibulous paper, when they assumed a slight coloration.

The cornin was also obtained in pure crystals by repeated recrystallization from strong alcohol, and pouring off the colored mother-liquor, which contained most of the bitter principle.

Thus obtained, cornin is in white or nearly white silky crystals, very bitter, very soluble both in alcohol and water, less so in ether. A solution in water is not affected by solution of iodine, corrosive sublimate, perchloride of iron, neutral acetate of lead, or chloride of barium, and is but slightly darkened by hydrate of ammonium and potassium. Basic acetate of lead gives a slightly colored precipitate. Nitrate of silver yields a white precipitate, which soon becomes dark and is entirely dissolved in diluted nitric acid.

The results agree in all essential points with those previously obtained by Geiger, as reported in Gmelin's "Chemistry."

Chemical Investigation of the Bark of a Plant known in Tabasco as MACALLO and in Yucatan as YABA.

By Juan Donde.

(Translated and abridged from "La Emulacion," March, 1879, by W. Barbeck.)

The macallo bark, examined by me, was in pieces about 75 centimeters long, from 10 to 30 centimeters broad and about 1½ or 2 centimeters thick. The thick periderm is of a light-gray color, with irregularly circular spots, which are either greenish-white, or the larger ones cretaceous white; it has numerous deep longitudinal fissures, is readily

separated from the inner bark in rather large pieces, and is sometimes perforated by insects. The liber has a reddish color, similar to that of cinchona and deeper upon the inner surface, which is slightly striate; it is about two-thirds of the thickness of the bark and has very tough fibres, forming a compact tissue.

The bark seems to be easily separated from the plant, and on drying becomes somewhat curved, and the broad pieces are slightly rolled upon the inner surface from both edges. The bark has a rather astringent taste, and after masticating it for some time, it imparts a reddish color to the saliva.

For obtaining the extract, 500 grams of the coarsely powdered bark were boiled for two hours in 5 liters of water, care being taken to replace the water which evaporated. When cold, the mass was expressed and the filtered liquid evaporated in a water-bath, yielding 100 grams of a brown-red extract, which became darker on exposure without showing other changes.

The powdered bark was displaced with ether containing one-tenth of water; the liquid separated into two layers, the upper one being greenish, and consisting mainly of a solution of resin in ether. The lower stratum was an aqueous solution of tannin, yielding, on evaporation, 2 per cent. of the weight of the bark. This *macallo-tannic* or *yabo-tannic* acid is yellow in transmitted and reddish-yellow in reflected light, has a very astringent taste, is easily soluble in water with a deep-reddish color, has a slight acid reaction and produces, with ferric salts, a greenish-black precipitate.

For obtaining the alkaloids 500 grams of the bark were macerated for twenty-four hours with water acidulated with hydrochloric acid, then boiled for an hour, and after cooling, the liquid was filtered and precipitated with sufficient milk of lime. The filtrate from the precipitate was acidulated with sulphuric acid, freed from the calcium sulphate by filtration, and concentrated, when 10 grams of fine white shining needles were obtained, having an acid taste, being insoluble in alcohol, nearly insoluble in water, and requiring 150 parts of diluted sulphuric acid for solution.

The mother liquor, on further evaporation, acquired a blackish color and yielded few impure crystals. The solution of the crystals yielded, with weak potassa solution, a gelatinous whitish precipitate which, after drying, weighed 2 grams, was amorphous, pulveruleat, tasteless, insol-

uble in alcohol, ether and water, and sparingly soluble in amylic alcohol and chloroform. The crystals were, therefore, the sulphate of an alkaloid, named *macallina*.[1]

The precipitate obtained with milk of lime was well washed, dried and treated with alcohol. On evaporating the filtrate to a syrupy consistence, 3 grams of fine colorless needles were obtained, which had a strongly saline taste, were freely soluble in water and neutral to litmus paper. The solution treated with weak potassa, yielded 1·34 grams of a yellowish-white precipitate which was amorphous, had a bitter taste and was insoluble in water, alcohol and ether, sparingly soluble in amylic alcohol, and somewhat more soluble in chloroform. The name *yabina* is proposed for this alkaloid.

The residue from the treatment with alcohol was treated with ether and other solvents. 0·50 gram of a greenish, tasteless, resinous substance, a humin-like compound and coloring matter were obtained.

In the same number of "La Emulacion," a paper by Dr. Desiderio G. Rosada, originally published in 1868, is reproduced, according to which macallo bark possesses antiperiodic, purgative and vermifuge properties. The principle to which the purgative and vermifuge properties are due appears to be a resin or an alkaloid, since it is soluble in strong alcohol but not in water. The undissolved portion is neither purgative nor anthelmintic, but has been found useful in intermittent fevers. The extract of the bark evidently contains considerable tannin, which accounts for its beneficial effects in chronic diarrhœa when given in small doses, but in large doses it is an effectual purgative.

On adding ammonia to an infusion of the bark a precipitate of an impure aikaloid is obtained, which, given in doses of two grains within twenty-four hours, has cured intermittent fevers.

Exposure to the vapors given off in preparing the extract produced a feeling of suffocation and a painful inflammation of the eyes.

The tincture of the flowers appears to be useful in spasms. After grinding the almond-like kernel of the fruit, washing it until the bitter and astringent taste has been removed, and mixing it with a small quantity of maize or wheat flour, a very good bread may be obtained.

The wood and bark are used for various purposes in the arts.

[1] The circumstances under which the salt was obtained and its behavior to solvents, etc., seem to indicate that it was largely composed of calcium sulphate.—EDITOR AM. JOUR. PHAR.

OIL OF GERANIUM.

By Dr. Gintl.

(Translated from "Ztschr. d. Allg. Oest. Apoth. Ver.," June 10, 1879, p. 268, by Louis von Cotzhausen, Ph.G.)

The volatile oils appearing in the market as oil of geranium are distilled from different species of Andropogon and Pelargonium, and on account of their rose-like odor are largely used as a cheap substitute for and as an adulteration of oil of rose.

Genuine oil of geranium, also called French oil of geranium or palma-rosæ oil, is distilled with water from the leaves and flowers of Pelargonium radula, and is colorless, or occasionally greenish, yellowish or brownish, the latter being most esteemed. It boils at 216° to 220°C., congeals at 16°C., has a pleasant odor similar to oil of rose, and rotates polarized light towards the right.

The so called Algerian rose oil is distilled from the leaves and flowers of Pelargonium roseum, *Willd.*, and P. odoratissimum, which are originally indigenous to the Orient, but are now cultivated in France and other countries. It greatly resembles French oil of geranium, but rotates polarized light towards the left. Both oils are frequently used for adulterating oil of rose, and are themselves adulterated with the oils of certain species of andropogon.

Turkish oil of Geranium (rosé roshe oil, oil of rose geranium or gingergrass oil) is the volatile oil of Andropogon pachnodes, *Irin.*, nat. ord. Graminaceæ, indigenous to India, Persia and Arabia. It is a yellowish, thin liquid, having a pleasant spicy odor, and does not congeal readily. It is said to be distilled at Mekka, and enters commerce by way of Smyrna and Bombay.

The Palma-rosæ oil contains pelargonic acid, $C_9H_{18}O_2$, a colorless oily liquid which solidifies at a low temperature, melts at 10°C., boils at 260°C. and belongs to the fatty acids. It also contains gernaniol, $C_{10}H_{18}O$, which is a colorless liquid, isomeric with borneol, has a pleasant rose-like odor, boils at 232°C., and yields, when heated with zinc chloride, geraniene, $C_{10}H_{16}$, in the shape of a colorless liquid, boiling at 163°C.

Guibourt distinguishes oil of rose, oil of geranium and rosé oil by means of iodine, nitrous acid and sulphuric acid. Iodine is placed in a porcelain dish under a bell glass, and around it watch-glasses containing

respectively 1 or 2 drops of the oils. Genuine oil of rose retains its color, while the other two turn brown, the geranium oil acquiring the most intense coloration. Copper filings moistened with nitric acid, used instead of the iodine, soon causes the bell-glass to be filled with red fumes, which are absorbed by the oils, and render oil of geranium apple green, while rosé oil and oil of rose become dark-yellow, the former more rapidly than the latter. If one or two drops of these oils are mixed with an equal amount of concentrated sulphuric acid they turn brown, the oil of rose retaining its pleasant odor, while the geranium oil acquires a strong and offensive, and the rosé oil a strong, fatty odor.

CHEMICAL NOTES.

By Prof. Saml. P. Sadtler.

Inorganic Chemistry.—*Preparation and Analysis of Potassium Ultramarine.*—With the aid of the silver ultramarine, prepared by Heumann, a great number of other ultramarines can be gotten, because of the affinity possessed by silver for the halogens with which the other metals may be combined as chlorides. Thus, on heating the yellow silver ultramarine with an excess of powdered potassium chloride, bromide or iodide in a porcelain crucible, the fused mass turns blueish-green, and after washing out the silver chloride, bromide or iodide with ammonia, or dilute potassium cyanide solution, the potassium ultramarine remains as a beautiful lasure-blue powder. The ultramarine, prepared by the aid of potassium iodide, appears to be the finest in color. An analysis showed the following composition in the pure material:

Potassium,	25·19
Aluminum,	13·84
Sulphur,	7·14
Silicon,	15·40
Oxygen (difference),	38·43

The direct preparation of a potassium ultramarine, after the methods used in the sodium ultramarine manufacture, does not appear ever to have succeeded.—*Ber.*, xii, p. 784.

On the Sulphides of Phosphorus.—G. Ramme has heated mixtures of sulphur and phosphorus, dissolved in carbon disulphide and placed in sealed glass tubes. He obtained, in this way, pale-yellow groups of

crystals, which, after several recrystallizations out of carbon disulphide, proved on analysis to have the composition P_2S_5. The corresponding trisulphide, P_2S_3, could not be obtained even though exactly the proper quantities of phosphorus and sulphur were heated together in the same way. The crystals formed in this case proved to have the composition PS_2. Possibly the formula should be P_2S_4. A vapor-density determination will be made to determine whether this may be so.

Although various mixtures of the two elements, these two products were the only compounds that could be obtained.—*Ber. der Chem. Ges.*, xii, p. 940.

On the Atomic weight of Antimony.—As Prof. J. P. Cooke, Jr., who spent some time on the subject, recently declared the atomic weight of antimony to be 120, Kressler, who had made a previous determination 122, has submitted Cooke's work to a careful revision, and has at the same time repeated his own experiments. He finds numerous faults in Cooke's work which he dwells upon in great detail. After correcting these he finds that Cooke's results would probably agree with those gotten by himself previously. He again re-asserts the atomic weight to be 122.—*Ber. der Chem. Ges.*, xii, p. 1044.

Organic Chemistry.—*On the Oxydation of Chinolin.*—A number of new results have been published, bearing upon the question of the oxydation of the quinia alkaloids. Thus, both Hoogewerff and Van Dorp, and W. Kœnigs, have studied independently the oxydation of chinolin by means of potassium permanganate. The first mentioned of these investigators have studied the chinolin from the coal tar residue, while Kœnigs has studied cinchonin-chinolin only. In both cases the principal product obtained was dicarbopyridinic acid, $C_7H_5NO_4$, a derivative of pyridin, one of the coal tar bases. If the calcium salt of this acid be heated with an excess of caustic lime there is obtained an alkaline distillate, which possesses the characteristic odor of Dippel's oil.—*Ber. der Chem. Ges.*, xii, pp. 747 and 983.

On the Oxydation Products of Quinia.—Skraup has followed up his experiments, on the oxydation of cinchonia and cinchonidia, by a trial of the oxydation of quinia itself.

Quinia sulphate was mixed in aqueous solution with sufficient sulphuric acid to change all the potassium of the permanganate into neutral sulphate. A 3 per cent. permanganate solution was added in

sufficient amount to bring 4 molecules of oxygen to act upon 1 molecule of the quinia. On washing the precipitated manganese dioxide with dilute alcohol, a substance crystallizing in sharply formed white prisms is extracted. Its aqueous solution reacts neutral, and it is precipitated by metallic salts. Skraup calls this quitenin. Its formula is $C_{19}H_{22}N_2O_4+4H_2O$.

The oxydation of quinia was also carried out with chromic acid, the resulting product being neutralized with barium hydrate, and the concentrated solution of the barium salt decomposed with dilute hydrochloric acid. The acid so obtained was called quininic acid, and possesses the formula $C_{11}H_9NO_3$. This acid, the author thinks, may be the alcohol or phenol of lepidin, a homologue of chinolin.—*Ber. der Chem. Ges.*, xii, p. 1104.

On artificial Atropia.—As is known, atropia on treatment with barium hydrate is decomposed into tropine and tropaic acid, according to the reaction:

$$C_{17}H_{23}NO_3+H_2O=C_8H_{15}NO+C_9H_{10}O_3.$$

The first, and perhaps most important step in the synthesis of atropia is the re-combination of these decomposition products to form the alkaloid again. This Ladenburg has just accomplished by treating the tropate of tropin with dilute hydrochloric acid at 100°. The tropin tropate used was in colorless crystals and gave no reaction for atropia, even when in 15 per cent. solution showing no action upon the eye. After the treatment for some time, with an excess of dilute hydrochloric acid, an oil separated out which, when purified, solidified to a mass of colorless needles. The author was unable to find any difference between the artificial atropia so prepared and the purest natural atropia.—*Ber. der Chem. Ges.*, xii, p. 941.

Preliminary notice of a new volatile Alkaloid.—Spigelia marilandica or pink-root has been known for many years to possess peculiar medicinal properties, seemingly indicative of the presence of an alkaloid. W. L. Dudley has made an effort to extract this alkaloid, and gives the following tabular statement of its properties as compared with those of nicotina, conia and lobelina:

	Spigelina.	*Nicotina.*	*Conia.*	*Lobelina.*
Iodine in a KI solution,	Brownish-red precipitate.	Brownish-red precipitate.	Pale brownish red precipitate.	Brownish-red precipitate.
Potassio-mercuric iodide,	White crystalline precipitate.	Yellowish precipitate.	Like nicotina.	Pale yellow precipitate.
Metatungstic acid,	White flocculent precipitate.			

The precipitate formed by potassio-mercuric iodide with spigelina is soluble in acids, in alcohol and in ether, but insoluble in an excess of the precipitant.—*Amer. Chem. Jour.*, vol. i, p. 104.

GLEANINGS FROM THE GERMAN JOURNALS.

By Louis von Cotzhausen, Ph.G.

Unguentum Hydrargyri.—Lunaczek modifies Godeffroy's process (see "Amer. Jour. Pharm.," May, 1879, p. 247) as follows: 1 gram turpentine and 2 grams liquid petroleum-residue thickened with a little paraffin or ceresin are mixed and triturated well with 40 grams mercury for a few minutes, when 5 or 10 grams old mercurial ointment are stirred into the mixture, and the trituration is continued until the mercury is completely extinguished; then the suet and lard are melted together, and when they commence to stiffen are added to the mercury mixture. —*Ztschr. d. Allg. Oest. Apoth. Ver.*, June 20, 1879.

Hair Dyes.—Bernbeck recommends the following formulas:

Light Brown.—Dissolve 1 part potassium permanganate in 100 parts water.

Dark Blackish-brown.—Pyrogallic acid, 1·4; solution of sesquichloride of iron (Phar. Germ.), 23·0; copper-chloride, 25·0 (readily prepared by dissolving carbonate of copper in hydrochloric acid); rose-water, 70·0. Mix.

After removing all fatty matter from the hair, it is moistened with these dyes, and the excess of the latter removed with a cloth or sponge. —*Pharm. Ztg.*, May 21, 1879, p. 310.

Syrupus juglandis compositus (Syrupus antirhachiticus Vanier), used successfully in the treatment of scrofula and rhachitis, is made by dissolving 20 grams of extract of walnut leaves and 10 grams of extract of pale cinchona in 20 grams of alcohol, 30 grams of sherry wine and 60 grams of simple syrup, and adding 5 grams of potassium iodide, 15

grams of anise oil sugar (containing 7½ drops oil of anise) and 850 grams of simple syrup. Dose for small children, a teaspoonful four to five times daily; for older children, ½ tablespoonful. Vanier's syrup is said to contain, in addition to the above, 5 per cent. codliver oil.—*Pharm. Centralh.*, May 8, 1879, p. 186.

Oil of Walnut Leaves.—By subjecting the dry leaves to steam distillation Ender obtained a very minute quantity of volatile oil, which congealed like stearoptene, and possessed the characteristic odor of the leaves.—*Pharm. Ztg.*, May 31, 1879, p. 333.

Oil of Cloves, obtained by Ender by percolating powdered cloves with carbon bisulphide, displacing the latter by water and distilling the percolate, previously separated from the aqueous layer, possessed a peculiar unpleasant odor, due to a little bisulphide, which made it unfit for use.—*Pharm. Ztg.*, May 31, 1879, p. 333.

Phosphorus emulsion, well adapted for making phosphorus pills and phosphorus paste, is prepared by Dr. E. Mylius, by adding in a mortar 150 parts phosphorus, previously dissolved in 60 parts carbon bisulphide, to a mucilage consisting of gum arabic 10 parts, powdered tragacanth 15 parts and water 150 parts, stirring carefully at first, and finally triturating the whole mixture into an emulsion.—*Pharm. Ztg.*, May 28, 1879, p. 324.

Phosphorus Paste.—800 parts wheat starch are triturated with 5,000 parts water, the mixture is gradually and slowly heated to 100°C., and then allowed to cool to 30°C., stirring continually. Add now the emulsion containing 150 parts phosphorus (see above), mix well and fill into salt-mouth bottles, which are corked carefully. If a colored paste is desired the color should not be affected by deoxidizing agents or acids, and should be added to the starch when first triturated with water. According to Dr. Mylius, this paste, if properly prepared, does not spoil.—*Pharm. Ztg.*, May 28, 1879, p. 324.

Carbon bisulphide is regarded by Prof. Kirschbaum as an excellent insecticide. He recommends exposing, in an air-tight box, furs, clothes, plants, etc., infested with moths or other insects, to the vapors of the bisulphide, and claims that it kills all insects without injuring the articles thus cleaned.

Hager uses carbon bisulphide for killing cantharides, and states that

it also prevents vegetable and organic substances from decomposing, fermenting and decaying.—*Pharm. Centralh.*, May 8, 1879, p. 194.

Poisonous Products from Fermenting Maize.—Pellagra, a disease peculiar to districts where maize is one of the principal articles of food, is believed by Profs. Lombrosa and Erba to be caused by peculiar strongly poisonous products, isolated by them after fermenting perfectly healthy maize. Dr. Cortez and Prof. Husemann's recent investigations confirm this view, but indicate that the principles were not isolated in a pure state, and that they have a varying influence on the nervous system, some prepared during the hot season proving as poisonous as strychnia, while others, obtained in colder weather, produced narcosis and paralysis, frequently accompanied by all the symptoms of nicotia-poisoning.—*Pharm. Ztg.*, June 7, 1879, p. 346.

The Alkaloid of Pomegranate Bark, named pelletierina by Tanret, should be called *punicin*, in Dr. F. A. Falck's opinion, because Rhighini's punicin, prepared in 1844, was the impure alkaloid, and because the name pelletierin should be reserved for the active principle of Pelletiera verna, *St. Hil.*, N. O. Primulaceæ.—*Archiv d. Pharm.*, June, 1879, p. 528.

Crystallized Salicylate of Physostigmia, $C_{15}H_{21}N_3O_2$, $C_7H_6O_3$, prepared by Merck, consists of colorless, brilliant, needle-shaped or rhombic crystals, is soluble in 24 parts of absolute alcohol, in 130 parts of water at 14° to 16°C., and very soluble in hot water. A solution of 1 part of the salicylate in 50 parts hot water will not crystallize on cooling. The salt is not altered by light, but its aqueous and alcoholic solutions, contained in well-stoppered bottles, begin to redden in one or two days.—*Ztschr. d. Allg. Oest. Apoth. Ver.*, May 20, 1879, p. 230.

Anthocercina.—Anthocercis viscosa, N. O. Solanaceæ, indigenous to Western Australia, is a poisonous plant, several feet in height. Ferd. v. Mueller and L. Rummel isolated the alkaloid by dissolving the alcoholic extract of the aqueous extract in water, adding caustic soda or ammonia, shaking with ether, and the ethereal solution with diluted acid, and after repeating the treatment with alkali and ether, evaporating the ethereal solution at a moderate heat. Anthocercin, thus prepared, is a yellow, oily, alkaline, volatile liquid, is heavier than water, has a bitter taste and a peculiar, pleasant odor, is scarcely soluble in

water, readily soluble in alcohol and ether, dissolves in concentrated sulphuric acid, yielding a yellowish-brown solution which turns violet on the addition of potassium permanganate, and yields straw-colored solutions with concentrated nitric and hydrochloric acid. The authors intend to investigate its physiological and toxicological properties.—*Ztschr. d. Allg. Oest. Apoth. Ver.*, June 10, 1879, p. 257.

Chinese Pear-Galls, so-called because they resemble pears in shape, are as large as medium sized plums; a transverse section shows a layer of strongly tangentially stretched parenchyma-tissue, consisting of 7 or 8 rows of cells next to the epidermis; the tangential elongation of the cells gradually diminishes, and near the centre they suddenly become radially elongated. In ordinary Chinese galls the layer consists of about 3 rows of cells, which are never radially elongated. C. Hartwich ascertained the pear-galls to contain 72 per cent. tannic acid on an average, but he was not able to trace their origin.—*Archiv d. Pharm.*, June, 1879, p. 524.

Pure Cuprous Chloride is prepared by Max Rosenfeld by conducting sulphurous acid into a solution of equal parts of sodium chloride and copper sulphate, and washing the resulting cuprous chloride on a filter, first with sulphurous acid until the filtrate passes colorless, and then with glacial acetic acid until the product becomes white. The acid is then removed as much as possible by suction, the cuprous chloride pressed between filtering-paper and dried on a water-bath until odorless; 0·5314 gram of the chemical thus prepared yielded on analysis 0·4266 gram copper sulphate=0·3406 gram copper=64·09 per cent. copper.—*Ber. d. Deutsch. Chem. Ges*, 1879, xii, p. 954.

Limonin and Columbin.—C. Schmidt considers limonin (from various species of citrus), and columbin (from colomba root), which correspond closely in their composition as identical, while E. Paternò and A. Oglialoro deny their identity, and state that they differ in melting point and in behavior towards alkaloids. Limonin melts at 275°C., and columbin at 182°C. Limonin dissolves unaltered in potassa lye, an acid salt is formed when columbin is boiled with it; limonin, on the other hand, forms a compound with baryta, which is not decomposed by carbonic acid, but from which stronger acids separate the unaltered limonin.—*Ber. d Deutsch. Chem. Ges.*, xii, p. 685, from *Gazz. Chem.*

NOTES ON ALSTONIA (Australian fever bark).

By Chas. Mohr.

Last April I received of Mr. J. U. Lloyd a specimen of a thick, rough, yellow, intensely bitter bark, with the request to ascertain the name of the plant from which it is derived.

The attention of Mr. Lloyd was first drawn to it by Prof. Scudder, from whom he received the bark, with the remark, that it made its appearance through parties intending to introduce a preparation of it as a powerful anti-periodic and febrifuge, and that, in view of its reputed remedial qualities, it would be to the interest of the profession to ascertain its source. Thus, it is to be credited to the efforts of Prof. Scudder that the remedy was prevented from being placed before the profession in the shape of a secret nostrum or patent medicine.

A short time after Messrs. Merrill, Thorp and Lloyd distributed samples of the bark, under the name of Alstonia. That it is the product of a species of that genus was rendered highly probable to me by its microscopical examination, which at once showed by the numerous scarcely anastomizing lacteal ducts running parallel with, and close to, the bastbundles of the inner bark, the structure characteristic to the Apocynaceæ, the natural order including the genus Alstonia, *R. Br.* After finding it, by comparison, to differ widely from dita bark, Alstonia scholaris, I failed in my further efforts to establish botanically, with certainty, the generic character of the plant from which it takes its origin.

To obtain a further clue towards that end chemical investigation was resorted to, and I was not disappointed in establishing in that way, beyond doubt, the claim of the drug to the name under which it came to notice through Prof. Scudder and Mr. Lloyd.

With the small quantity of material at hand a regular course of analysis was out of question, and I had to direct my efforts, towards obtaining an alkaloid or other characteristic constituent of the drug. I divided my material in two parts, using one for the preparation of an alcoholic extract, and submitting the other to treatment with dilute hydrochloric acid. Fortunately, while engaged in my work, "Wittstein-Muellers' Constituents of Plants" came into my possession, and I was able to confine myself at once to the search for alstonin and a study of its reactions. On treating the alcoholic extract with ammonia a brown flocculent precipitate was obtained, which, after being dried, was found

to be soluble in ether. The etherial solution left after evaporation a yellow amorphous substance, of the bitter taste of the bark intensified, readily soluble in alcohol, chloroform, diluted mineral acids and a solution of potassic hydrate, but sparingly in water; all the solutions are highly fluorescent, the blue color appearing by transmitted light, even in solutions largely diluted. Concentrated nitric acid dissolves the dry substance with a deep-red color, turning yellow when heated. These properties and reactions are, in all instances, the same as those peculiar to alstonina, the alkaloid discovered by F. v. Mueller and Rummel in the bark of Alstonia constricta,[1] and leave no doubt about its identity with that organic base.

In examining the extract of the bark obtained by exhausting it with dilute hydrochloric acid I found another basic constituent present. By treatment with ammonia a precipitate was obtained, the largest part of which is insoluble in ether, alcohol and chloroform. It was placed on a filter, well washed with ether until the filtrate passed tasteless, and dried over sulphuric acid. The etherial filtrate evaporated upon a watch-glass left alstonina. The undissolved part freed from that alkaloid is a friable substance, showing no crystallization, of a grayish-white color (probably pure white when obtained in a purer state), tasteless, insoluble in alcohol, to all appearances very sparingly soluble in water, readily in diluted hydrochloric and nitric acid, forming colorless, *not* fluorescent solutions of flat not bitter taste, yielding with ammonia and potassic hydrate whitish precipitates insoluble in an excess of the precipitants. Treated with concentrated sulphuric and nitric acids, the dry substance is dissolved without change of color. Want of material prevented me from carrying my investigation further and from deciding whether this basic substance must be classed with the glucosides; this seems to be most probable, as its solutions are not precipidetated with mercurio-potassic iodide, platinic chloride or tannic acid. After informing Mr. Lloyd, early in May, of these results, he adopted the name of Alstonia constricta for the drug.

Yet, in want of botanical evidence to justify myself to regard it as the product of that plant, I sent a piece of the bark to Sir Jos. Hooker, who, in his reply to my inquiries about its botanical character, kindly informs me that it is, "as I supposed," the bark of Alstonia constricta,

[1]Wittstein—The Organic Constituents of Plants, etc. Translation by Baron F v. Mueller, Melbourne.

F. v. Muell., from Queensland, Australia, called by the colonists *Fever bark*, and used as a powerful tonic and antiperiodic instead of quinine; the plant is described in Bentham's "Flora Australiensis," vol. iv, 316, and Mr. Petit, of Paris, found an alkaloid in the bark.

The first notice of the drug in this country I find in "New Remedies," October, 1878, where it is stated that Dr. Cathcart reports that the bitter bark of Alstonia constricta, sometimes called native quinine, is in common use by the shepherds in the interior of Southern Australia, on account of its antiperiodic properties, as a domestic remedy for malarial fevers.

In Europe it seems that Mr. Petit, in September, 1878, first makes mention of the bark in announcing at a meeting before the Société de Pharmacie the receipt of Australian fever bark (from Alstonia constricta), and the obtaining of an alcoholic extract from it which is precipitated by all alkaloid reagents.[1] The "Chemical News" of last November contains an account of the investigations of Fred. v. Mueller, resulting in the discovery of alstonin, which is also found in Mueller-Wittstein's "Constituents of Plants," above referred to. In the May number of the "Eclectic Medical Journal," of Cincinnati, Prof. Scudder for the first time records the effects resulting from the administration of the drug, his experiments tending forcibly to confirm its reputed antiperiodic properties. In the following (June) number of the same journal the editor introduces the drug as the bark of Alstonia constricta, citing the testimony of several physicians who, on a careful trial of it in fever and ague and intermittent fever, report the most satisfactory and encouraging results. To these evidences of the value of the remedy must be added the reports received by Messrs. Merrell, Thorp & Lloyd from the practitioners to whom they had sent samples of the powdered bark with the request to give it a trial, all uniting in its praise as an antiperiodic and febrifuge equal to quinine.

Description.—Alstonia.—Fever bark, Bitter bark of Australia.

The bark of Alstonia constricta, *F. v. Mueller*, Bentham's "Flora Australiensis," vol. iv, 316.

Nat. Ord., Apocynaceæ.

Australian fever bark comes from a tall shrub or tree, sometimes attaining a height of 40 feet, with glabrous, long, petiolate leaves, vary-

[1] "New Remed.," Nov., 1878, p. 337.

ing in shape from ovate to lanceolate, acute or acuminate; the numerous flowers in corymbose cymes, producing follicles 3 to 4 inches or more in length, with flat or concave linear pubescent seeds. The bark occurs in semicircular pieces of various length, about 4 inches wide and from 1½ to 2 inches and over in thickness, according to the more or less exuberant development of the corky layers. The rough outer bark is furrowed by more or less broad and deep longitudinal fissures, presenting in the cross section a margin correspondingly deeply indented by irregular more or less wide and deep sinuosities. The exposed surface of the bark is of a dingy gray-brown, and of an ochre color where fresh layers of cork are exposed. This outer bark, forming far the largest part, shows in the cross section a mottled yellow and brownish color, resulting from somewhat irregular concentric layers of a clear ochry-yellow, alternating with bands of a deeper tint. It is of spongy texture, and friable. The middle and inner layers about a quarter of an inch in thickness, are compact and homogeneous, in the cross sections of a yellow color, and under the lens appearing punctate from the darker faces of the bastbundles; of a fibrous structure, hard and tough, and on the inner side serrated by longitudinal ridges, caused by the impressions of the bastbundles upon the cambial layer. The powder of the bark is of a dingy yellow, and possesses a faint not unpleasant odor, and a lasting, purely bitter taste. The active principles are contained chiefly in the middle and inner bark.

Mobile, July 24th, 1879.

THE ALKALOIDS OF ALSTONIA CONSTRICTA.

The bark of the Australian *Alstonia constricta*, F. Mueller, which is reputed to possess the properties of cinchona bark and to be used with success in the treatment of intermittent fevers, has recently been the subject of examination by several investigators, who have obtained somewhat discordant results. Mueller and Rummel[1] first reported that by treating the alcoholic extract with water and a little hydrochloric acid, adding to the filtered solution a slight excess of ammonia, dissolving the separated flocks in ether and evaporating, and purifying the residue by again dissolving in acid and repeating the process, they had obtained an orange-yellow brittle pellucid mass, possessing the proper-

[1] Wittstein's "Organic Constituents of Plants."

ties of an alkaloid, and to which they gave the name "Alstonine." It melted below 100°C., and carbonized at a higher temperature, dissolved easily in alcohol, ether and dilute acids, but only sparingly in water. All its solutions in a dilute state exhibited a strong blue fluorescence, not affected by acids or alkalies, and its alcoholic solution had a slightly alkaline reaction. It combined with acids without completely neutralizing them. Strong acids and alkalies partially decomposed it on evaporation in a water-bath to a dark-colored acid substance. The compound with hydrochloric acid was precipitated by the chlorides of platinum and mercury, potassio-mercuric and potassio-bismuthic iodides, biniodide of potassium, phosphomolybdate and phosphotungstate of sodium, potassium bichromate, picric acid, and the alkalies and alkaline carbonates. Concentrated nitric acid dissolved it with a crimson color, turning yellow on warming; and sulphuric acid with a reddish-brown, that became afterwards dirty green; while hydrochloric acid only formed a yellowish solution.

The correctness of these results was disputed by Hesse (who with Jobst not long since isolated two alkaloids, ditamine[1] and echitamine, from the allied *Alstonia scholaris* bark), and in a paper read before the Berlin Chemical Society[2] he expressed the opinion that the supposed alkaloid was a mixture of chlorogenine and porphyrine.

Still more recently Oberlin and Schlagdenhauffen have announced the isolation of two alkolides—one crystallizable and the other amorphous—from *A. constricta* bark. The following details are taken from a rather lengthy paper on the subject published in the "Journal de Pharmacie et de Chimie" for June.

The bark was first extracted in a displacement apparatus with warm ether as long as the ether took up coloring matter (72 hours); as a mean of three experiments the amount of apparently crystalline orange substance taken up by the ether was only 1·038 per cent. The bark was then exhausted with boiling alcohol during several days, which took up 27·74 per cent. more, and it had then lost all its bitterness. It was next boiled with water which removed 1·375 per cent. of substance containing principally salts and a small quantity only of organic principles. The composition of the bark is represented as follows:

[1] "Pharmaceutical Journal" [3], vi, p. 142. Am. Jour. Pharm., 1876, p. 369.
[2] "Berichte d. Deutsch. Chem. Gesells," 1878, p. 2175.

Principles soluble in Ether,	1·038
Principles soluble in Alcohol	27·740
Principles soluble in Water,	1·375
Hygrometric Moisture,	8·932
Saline Matter,	9·748
Ligneous Substance (by difference),	51·167
	100·000

No examination was made of the alcoholic extract, the author's operations being confined to the much smaller quantity (1·038 per cent.) of ethereal extract. This was treated with dilute hydrochloric acid (1 in 200) to remove fatty matters, about one-half its weight, when the hydrochloric solution presented a very decided green dichroism. Upon filtering through animal charcoal the greater part of the coloring matter was taken up by the charcoal, but the nearly colorless filtrate presented a very pronounced blue fluorescence. This hydrochloric solution gave to reagents distinct indications of an alkaloid, to separate which in a definite crystalline form several methods were tried unsuccessfully. Eventually, the solution was precipitated by ammonia, the precipitate dried under a glass over sulphuric acid, and then exhausted by ether, which separated a brownish resinous substance. The ethereal solution was evaporated, the residue again dissolved in dilute hydrochloric acid, precipitated with ammonia and the precipitate treated with ether until all colored matter was removed, when the ethereal solution being enclosed in a perfectly closed test-tube yielded a crystallization of the alkaloid, which the authors propose to call "Alstonine."

The alstonine of Oberlin and Schlagdenhauffen is described as crystallizing in silky tufts of brilliant, colorless isolated or stellate crystals. It is soluble in ether, alcohol, chloroform, benzin, acetone and petroleum. In cold water it is insoluble, but it is rather soluble in boiling water, to which it imparts a bitter taste. The aqueous solution colors red litmus paper blue. Weak acids dissolve it completely, and it is precipitated from solution by all the alkaloidal reagents. Heated upon platinum foil it first melts, then at a higher temperature gives off an aromatic odor, disengages an abundance of yellow vapor, carbonizes and finally disappears without leaving any residue. The yield of this alkaloid is extremely small. In contact with concentrated sulphuric, nitric or hydrochloric acid the crystals dissolve quickly with scarcely any color, a yellowish tint being scarcely perceptible. Upon adding

water to these acid solutions a superb blue fluorescence is immediately produced. Concentrated sulphuric acid containing bichromate of potash colors the crystals an intense blue-green, passing to violet and then to purple; upon adding water a crimson liquid is immediately produced.

The mother liquor from which the above crystalline body was obtained left, upon spontaneous evaporation, an amorphous nitrogenous residue, possessing alkaloidal properties. It resembled alstonine among other points in solubility, except that it was only slightly soluble in boiling water, to which it imparted a strongly alkaline reaction. It differed also in its behavior with the concentrated mineral acids. Sulphuric and hydrochloric acids dissolved it with a greenish-brown tint; whilst with nitric acid it gave a splendid crimson-red, in this resembling more closely the substance obtained by Mueller and Rummel. But the acid solutions of the amorphous alkaloid gave no fluorescence.

In considering the question whether the amorphous body might not be identical with the crystalline, differing only in being less pure, Oberlin and Schlagdenhauffen are of opinion that they are two bodies, but possibly related to each other in a manner similar to quinia and quinicine, and they are engaged in experiments to clear up this point. Meanwhile they propose for the amorphous alkaloidal substances the name of "Alstonicine."—*Pharm. Jour. and Trans.*, June 28, 1879.

BIDARA LAUT.[1]

By Henry G. Greenish.

Bidara laut has already been the subject of several communications to the "Pharmaceutisch Weekblad" during the past two years. In a critique on the Plantkundig Woordenbook voor Nederlandsch Indië, which appeared in the issue of that journal for January 14, 1877, the botanical source of Bidara laut is referred to a species of *Sisyphus*, of the natural order Rhamnaceæ, plants of which order are characterized by their tonic properties.

Dr. E. A. Van der Burg, in the same journal for January 28, 1877, remarks that the wood, according to his analysis, contained brucia in quantity apparently considerable (though not estimated), and that strychnia and other alkaloids were absent. From information received

[1] Reprint from Pharmaceutical Journal and Transactions, June 14th, communicated by the author.

from Mr. J. D. Vrijdag Zijnen, he believes the source of the wood to be *Strychnos ligustrina*. On the other hand, a short note in the issue for August 26, 1877, refers the wood to *Eurycoma longifolia*, Jack., a simarubaceous plant.

Messrs. Wattez and Bakhoven appear, from a communication made by the latter on March 18, 1878, to have had occasion to examine this wood, and to have come to the conclusion that brucia, or at least an alkaloid agreeing with brucia in all reactions, was present, but that strychnia was absent.

Mr. Vrijdag Zijnen, Jr., of the Hague, however, informs us that, according to analyses of various samples of Bidara laut made by his father in conjunction with Dr. E. A. Van der Burg, brucia principally is present, but that some sorts contain strychnia also. To this Dr. Van der Burg replies in the issue for April 21, 1878, and points to a misinterpretation by Mr. V. Zijnen of his father's analyses, and stating that Bidara laut had been examined in his laboratory without a trace of strychnia being found.

A few days ago an opportunity of analyzing a sample of this drug obtained from Mr. Vrijdag Zijnen presented itself to me, the results of which form the subject of this communication.

Without going deeply into its history, it may be here stated that Bidara laut is largely used in India as a popular remedy for dysentery, the people being in the habit, according to Mr. Vrijdag Zijnen, of scraping a spoonful and taking it in a glass of water. The sample which I had given me consisted of part of the trunk or branch of a small tree, about 2½ inches in diameter, with small eccentric pith, exceedingly hard wood and thin, dark grey bark, in some places exfoliating but in others adhering to the wood with considerable tenacity.

Professor Russow, of this University, has been kind enough to undertake the microscopical examination, with a view to ascertaining the botanical source of the wood. From him I learn the development of phleom in the pith, well-shown in the Bidara laut, is a peculiar characteristic of plants belonging to the group Contortæ, which includes the orders Gentianaceæ, Loganiaceæ, Apocynaceæ and Asclepiadaceæ. The size of the sample, Bidara laut however, excludes Gentianaceæ and Asclepiadaceæ, which orders produce herbaceous or at most shrubby plants. The presence of brucia and the absence of laticiferous tissue prove without doubt that the plant yielding Bidara laut belongs to the natural

order Loganiaceæ, and the suppositions previously quoted that the source of the wood was a Rhamnaceous or Simarubaceous plant are incorrect.

The qualitative analysis of the drug for strychnia and brucia was carried out as follows:

4·6 grams of the bark, carefully separated from the hard wood and powdered, were macerated in 100 cc. of water acidulated with 20 drops of dilute sulphuric acid (1 in 5) at a temperature of about 50° to 60°C. for 24 hours, and the fluid then filtered off; the maceration was repeated for a shorter period of four hours, and again filtered, and the filtrates and wash water united. This liquid, amounting in all to about 250 cc., was shaken with freshly-rectified benzin (about 50 cc.), and after the mixture had separated into two layers, the lower aqueous still acid layer was removed, made alkaline with ammonia and again shaken with benzin. This benzin solution, after separation and filtration, yielded, on evaporation in watch-glasses, alkaloid in considerable quantity, in very nearly colorless amorphous transparent drops, perfectly soluble in acidulated water. A portion of the alkaloid was dissolved in sulphuric acid (of the constitution $H_2SO_4H_2O$) and a small quantity of nitric acid added, when the characteristic brucia reaction made its appearance. After the orange color so produced had faded to pale yellow the strychnia was tested for by means of oxide of cerium (Ce_3O_4). No trace could be found. The experiment was repeated with like result. A control experiment with commercial brucia, impure from the presence of strychnia, yielded at once a splendid strychnia reaction. All brucia reactions succeeded perfectly.

The wood was tested in precisely similar manner, with similar results. The quantity of alkaloid present, however, was notably less.

The quantity of brucia in the bark appearing considerable, it was thought an estimation of the amount present in it and in the wood might prove interesting. This was made as follows:

2·0463 grams of the scraped and finely-powdered wood were boiled with successive portions of water, acidulated with sulphuric acid, until the residue was free from bitterness. This was effected by three boilings with 75 cc. and one with 25 cc. The united filtrates were nearly neutralized with solution of soda and evaporated on a water-bath to a small bulk (25 cc.). The liquid having deposited resinous matter, was filtered off, the precipitate washed and tested free from alkaloid.

The liquid being now still slightly acid, the estimation was made by means of titration by Mayer's solution (potassiomercuric iodide), 1 cc. of which corresponds to 0·0197 gram anhydrous brucia.[1] 2·2 cc. of solution were required, indicating 0·04334 gram brucia, or 2·11 per cent. An estimation of the moisture in the wood showed 6·67 per cent. The percentage of anhydrous brucia present in the dry wood is, therefore, 2·26.

The estimation of alkaloid in the bark was made in precisely similar manner.

1·8908 gram yielded liquid required 6·3 cc. Mayer's solution=0·12411 gram brucia, or 6·56 per cent. The estimation of moisture in the bark shows 11·23 per cent. The percentage of anhydrous brucia present in the dry bark was then no less than 7·38.

The quantity of brucia present in the wood and bark, and its freedom from strychnia, would point to this drug as a source of pure brucia, free from strychnia, in cases in which such may be required.

Since the conclusion of the above experiments, I have been enabled to examine in a similar manner the wood and bark of *Strychnos colubrinum*. The specimen, which was formerly in the Martiny Collection of Drugs, consisted of a large portion of the tree trunk, about 12 inches long and 3 inches in diameter. The wood was not so compact as that of *Strychnos ligustrina* (Bidara laut), hollow in the center, the wood bordering on this hollow part being black, extremely hard and entirely destitute of the bitter taste which characterized the remainder of the drug.

The qualitative analysis showed the presence of brucia and strychnia, the reaction of the latter being especially well marked in the alkaloid from the bark.

The quantitative analysis gave:

In the wood, moisture, 9·02 per cent.; alkaloid in dry wood, 0·96 per cent.
In the bark, moisture, 9·19 per cent.; alkaloid in dry bark, 5·54 per cent.

The alkaloid was estimated in the first instance volumetrically,[1] in the second gravimetrically.[2] The results are in both instances calculated to anhydrous brucia.

[1] Dragendorff, "Chemische Werthbestimmung."
[2] "Die Chemische Werthbestimmung," etc. Dragendorff, St. Petersburg, 1874.

It is more than possible that the intermixture of this wood with the Bidara laut has given rise to the variations in the latter found by Mr. Vrijdag Zijnen.

Two samples of the bark of *Strychnos Nux Vomica*, formerly known as false angustura bark, were also examined. The samples selected consisted in the one case of young and comparatively thin bark, in the other of old and thick. They yielded respectively—

Young bark, moisture, 7·79 per cent.; alkaloid in dry bark,[1] 3·10 per cent.
Old bark, moisture, 7·83 per cent; alkaloid in dry bark, 1·68 per cent.

Dragendorff,[2] in a sample which would occupy, in regard to age and thickness, an intermediate position, found 2·4 of brucia in addition to a small amount of strychnia.

The percentage of alkaloid would seem, then, to diminish as the age and apparently also the thickness of the bark increases. This, perhaps, offers us an explanation of the fact that the alkaloids are present in *Strychnos colubrina* in smaller quantity than in *Strychnos ligustrina* (Bidara laut), the bark of the latter being thin and papery in comparison with that of the former.

Dorpat, Russia.

SCOPARIN AND SPARTEIN.

By E. Merck.

Increased attention having been recently directed in Germany to the diuretic properties of an old popular remedy, the broom (*Sarothamnus Scoparius*), the author was induced to prepare a quantity of the two bodies, scoparin and spartein, discovered in the plant by Stenhouse in 1851 and described by him as its active principles, and to submit them to Dr. Fronmüller for therapeutic experiment. The results obtained are described in a paper in the "Heilbronner Memorabilien," 1878, Heft 12.

Scoparin occurs in the form of a fine yellow powder, in which under the microscope isolated acicular crystals can be seen. It is sparingly soluble in cold water, more freely in boiling water, whilst it dissolves readily in alcohol and glycerin. With alkalies, on account of the weak acid properties of scoparin, no constant neutral compound can be

[1] Calculated to anhydrous brucia.
[2] "Ermittelung von Giften," 1876, p. 154.

obtained. The best form for its administration is as a subcutaneous injection in doses of 0·03 to 0·06 gram. For this purpose it is dissolved in water either with the aid of an addition of glycerin or a trace of ammonia. 0·03 gram of scoparin, 1 gram of water and a small addition of ammonia give a suitable solution for one application. For a glycerin solution, the proportions are—0·06 gram scoparin, 0·75 gram water and 0·25 gram glycerin. The ammoniacal solution causes the least pain.

Whilst the above doses administered subcutaneously produced a strong diuretic action, when administered by the mouth to produce equal results, the doses require to be increased to 0·5 and even 1·0 gram. This is possibly due to the sparing solubility, and may indicate the necessity of experiments in the direction of an ammoniacal solution for internal administration. No injurious effects upon the digestion have been observed.

The second body, spartein, occurs in the broom in much smaller and very variable quantities. In the pure condition and freshly prepared it is an almost colorless oily liquid, which when exposed to light and air, rapidly becomes colored yellow to brown. It possesses a peculiar smell, recalling that of hyoscyamin, and a very bitter taste. It has no action on the pupil of the eye. In water it is insoluble, but dissolves in alcohol. It gives the characteristic alkaloid reactions, has strongly basic properties and forms with acids crystallizable salts, readily soluble in water. Of these the author has principally prepared the sulphate in the form of a white powder, showing crystals distinctly under the microscope. There is no difficulty in preparing larger crystals, since the author has obtained them one centimeter in length; but he considers the small crystalline form presents advantages in the preparation of a pure compound and in dispensing. The crystals belong, so far as can be determined, to the monoclinic system. The pure spartein being, as above mentioned, a very sensitive and alterable body, the author thinks the sulphate will be found more suitable for administration, its ready solubility in water also favoring its subcutaneous injection.

Although the experiments with this salt have not been numerous they have shown that neither its internal nor subcutaneous administration produces unpleasant accidents or smarting, whilst its diuretic action was considerable. An aqueous solution was used of the strength of

1 part of sulphate of spartein to 50 of water and of this the internal dose was 30 drops (= 0·04 gram of the salt) and the subcutaneous 1 gram (= 0·02 gram).—*Pharm. Jour. Trans.* [Lond.], June 28, 1879.

PREPARATIONS FROM THE SQUILL.

By E. Merck.

In consideration of the unsatisfactory nature of the so-called "scillitin," which has been looked upon as the quintessence of squill extract, although not perhaps as the pure active principle, and induced by the wish to present the diuretic portion of the squill as the purest possible body and in convenient form, the author has carried out a new examination of the *Scilla maritima*. Up to the present time this has yielded him three substances, which upon the suggestion of Prof. Husemann, of Göttingen, who has made some physiological experiments with them, and Dr. C. Moeller, he has named scillipicrin, scillitoxin and scillin. Some therapeutic experiments are being made under the care of Dr. Fronmüller.

Scillipicrin is a yellowish-white amorphous powder, very hygroscopic and very soluble in water, and having a bitter taste. Its solubility in water allows of its subcutaneous injection. It has a definite action upon the heart: a slackening of the heart-beats and eventual cessation in diastole is the result of an excessive dose, which with frogs amounts to 0·01 to 0·02 gram.

Scillitoxin is a cinnamon-brown powder, insoluble in water and ether, soluble in alcohol. The solution in alcohol has a lasting bitter and burning taste. The dry substance has a powerfully irritating action upon the mucous membrane of the nose. In aqueous solutions of the alkalies it is readily, but not absolutely completely dissolved; upon heating the solution in soda ley a peculiar koussin-like odor is developed. Acids produce in these alkaline solutions a flocculent precipitate. When concentrated sulphuric acid is poured upon scillitoxin, first a red and then a brown color result: nitric acid produces first a light red and finally an orange-yellow to yellowish-green color. The use of scillitoxin in subcutaneous injection is rendered difficult by its insolubility in water, and this necessitated, in the experiments with frogs, the introduction of the preparation under the skin in the solid

state or mixed with sugar, when the curious observation was made that this substance—insoluble in water—was easily and rapidly dissolved and absorbed.

Scillitoxin also acts upon the heart: it is a decided heart poison, but far more intense in its action than scillipicrin. Whilst, as above mentioned, the minimum lethal dose of the latter for frogs is 0·01 gram, one-eighth of a milligram of scillitoxin suffices to bring the heart to a standstill; but, contrary to scillipicrin, scillitoxin causes the stoppage of the heart in systole. The author thinks that it is probably in scillitoxin that the peculiar active principle of the squill is to be looked for.

Scillin is a light yellow crystalline tasteless powder. It is difficultly soluble in water, but soluble in alcohol and boiling ether, from which it again separates in the crystalline condition. Concentrated sulphuric acid colors it red-brown; nitric acid colors it first yellow and then green to dark green, especially when heated. It is contained in the squill in small quantity.

Scillin has of the three substances the least activity. It does not approach the action on the heart of the other two; on the other hand it appears to produce the subsidiary actions of the squill, such as numbness, vomiting, etc.

The author infers from the foregoing that the first-mentioned two preparations—scillipicrin and scillitoxin—are those worthy of attention, though which will have the advantage as a diuretic in practice must be decided by experiment. But he considers their noteworthy antagonism in paralyzing the heart—the one causing cessation in diastole and the other in systole—proves without doubt that neither the extractum scillæ, the so-called scillitin, nor the squill itself, presents the best means of administration, which can only be obtained by the separation of the active constituents and the simultaneous removal of scillin, the cause of the injurious subsidiary actions.—*Pharm. Jour. Trans.* [Lond.], June 21, 1879.

LINIMENTUM TEREBINTHINÆ ACETICUM.

By H. Collier, Teacher of Pharmacy, Guy's Hospital.

Linimentum terebinthinæ aceticum cannot be regarded as a perfect preparation. It is composed of equal parts of a fixed oil holding camphor in solution, a volatile oil, and a watery acid fluid, and the imper-

fection of this mixture is, that separation begins as soon as shaking has ceased. Of course, no other result could be expected from such ingredients, and in the original formula for St. John Long's celebrated liniment, of which the British Pharmacopœia preparation is an imitation, the yolk of egg was used to form an emulsion. There would, however, be some objection to this emulsifying agent in an application which is intended to be rubbed on the skin, and gum or mucilage, the ordinary means of forming emulsions, would also not be suitable on account of their stickiness. It is, however, possible to render this liniment perfectly smooth and creamy, and one which, upon evaporation, leaves no solid matter like the yolk of an egg or mucilage. The agent employed is a tincture prepared from the bark of the *Quillaia saponaria*. The use of this tincture in the formation of emulsions of oils and resins is by no means a new one; for in *L'Union Médicale* for 1851 is an article by Le Beuf on the use of this tincture for making emulsions, and Le Beuf made and advertised coal tar saponine, émulsion de baume de tolu and émulsion de goudron végétal. It does not appear to me to have come into use in English pharmacy, but is really a valuable agent worthy of a place in it. It is in constant use at Guy's Hospital for the preparation of emulsions, and in the new Pharmacopœia of that Hospital, which will appear in a few weeks' time, a formula is inserted for preparing the tincture, which is an ingredient in some of the hospital mixtures. In the "Rapport sur les Médicaments Nouveaux,"[1] published by the Paris Society of Pharmacy, tincture of quillaia is introduced for the "émulsion des médicaments insolubles dans l'eau." I make the tincture by digesting 4 ounces of quillaia bark, coarsely powdered, in spt. vini rect. Oj (imper.) for four days, and then filtering. ʒss of this tincture emulsifies perfectly ʒss of a fixed oil such as ol. morrhuæ with ℥ss of water. It appears to me from the results of my experiments that it is more suited for fixed and volatile oils than for resins. I hope, however, at some future time, to be able to state precisely the use of tinct. quillaia as an emulsifying agent.

To return to linimentum terebinthinæ aceticum. The following formula gives a creamy emulsion, which is permanent for at least six minutes after shaking, and which slowly separates into three layers, a

[1] See *Pharmaceutical Journal* [3], vol. viii., p. 26. Amer. Jour. Pharm., 1877, p. 348.

watery one below, a cream in the centre, and an oily stratum at the top. After the lapse of several hours this resolves itself into two layers.

℞ Ol. Terebinth.,
Acid. Acetic.,
Lin. Camph.,
Tinct. Quillaiæ, . . . ää partes æquales.

Shake together the tincture, camphor liniment and oil of turpentine, and then add the acetic acid and again shake.—*Pharm. Jour. Trans.* [Lond.], June 21, 1879.

PEROXIDE OF HYDROGEN.[1]

By George E. Davis.

Most books tell us that H_2O_2 is made by a roundabout process with BaO_2 and HCl; this might have been in days gone by, but now it is made principally by means of barium peroxide and hydrofluoric or fluosilicic acids. An insoluble fluoride of barium or fluosilicate is formed, which separates at once and peroxide of hydrogen remains.

Now, if hydrofluoric or hydro-fluosilicic acids have been used, we need not expect to find hydrochloric, as this latter can only be present when impure fluoride is used, impure acids or impure water. Of course it is absolutely necessary to examine carefully every sample of peroxide of hydrogen which may be purchased, for many statements have been made at various times respecting the purity of the bought article. One chemist assured me that the first lot he purchased was full of hydrochloric acid, whilst another chemist actually assured me that peroxide of hydrogen would not oxidize sulphide of sodium in vat liquors. More statements than these have been made respecting the efficiency of this reagent, but in each and every case it would have been more creditable to the author of the statement had he examined thoroughly the facts of the case before making complaint against one of the most useful articles used in chemical analysis.

Now, the first thing which requires to be estimated is the active oxygen, and this may be seen when I state that the sample which would not oxidize sulphide of sodium contained only a trace of active oxygen. Many methods may be devised for estimating the strength of this

[1] A paper read before the Faraday Club.

article. I have used the following three methods with satisfactory results:

1 cc. was put into Crum's tube over mercury and run underneath the tap; then 5 cc. of a saturated solution of bichromate of potash, the whole gently agitated, the liberated oxygen measured and corrected for temperature and pressure. In working on a certain sample as a mean of several experiments, 1 cc. gave 8 2 cc. of oxygen at 0°C. and 760 mm.

By a second method 10 cc. of the peroxide were boiled with 20 cc. of sulphurous acid, and the sulphuric acid which was formed precipitated as barium salt and weighed; the sulphuric acid existing as such in the sulphurous acid being deducted from the precipitate. 10 cc. oxidized 0·46 gram SO_2, or 7·08 grs.

By a third method 10 cc. of the peroxide oxidized 146 cc. $\frac{N}{10}$ protosulphate of iron. Now if we calculate these we shall find that our first method gives the strength of the solution as 8·2 volumes, and they all, when expressed as in grams of oxygen per liter, show 11·72, 11·53, 11·68.

For general work the bichromate method is preferable, though when extreme accuracy is required the iron method may be employed if conducted in a stream of carbonic acid.

Now, as to the stability of peroxide of hydrogen. It has been stated quite recently, and by one of the members of this Club, that it is so unstable that simply drawing air through a solution of it will abstract the whole of its active oxygen. I don't know what amount of air is considered necessary, but I should say a great deal, and neither do I know what tests he used to ascertain that there was no peroxide left undecomposed. An alkaline solution of peroxide is partly decomposed by agitation only, but an acid or neutral solution is very stable. An alkaline solution of peroxide has been used over a very long time in connection with a continuous aspirator, 10 cc. of peroxide and the necessary quantity of water aspirated through at a speed of 15 cubic feet per twenty-four hours has shown an excess of peroxide at the finish of the experiment, even when caustic soda was present in excess also. I have evaporated a 10-volume solution of peroxide to half its bulk without driving off more than two-thirds its active oxygen, but when reduced to that bulk caustic soda was added, the elimination of

oxygen was so violent as to amount almost to explosion. When kept in solution in the laboratory a 10-volume solution of peroxide is moderately stable. During 1878 tests were made of a sample by the bichromate method over mercury; the strength gradually decreased from 9·0, on August 2, to 7·2, on October 24. A few drops of ether were now added to 250 cc. of that sample of October 24, and the tests continued until December 24, when it still was 7·2.

Ether seems to preserve it, a fact which has been known for some time. This was also mentioned to me by Dr. Messel, of Silvertown, in August, 1878, a method I have used ever since. It is stated in all our text-books that peroxide of hydrogen is neutral to test-papers. Now, all commercial peroxide is faintly acid with the excess of hydrofluoric or hydrofluosilicic which is added and which should be estimated in each sample before using it.

I have used peroxide of hydrogen since 1873, and latterly in comparatively large quantities, and I have made it a rule to examine each purchase as follows: 100 cc. of the peroxide was evaporated to dryness with 10 cc. N soda, ignited, and taken up again with water. N acid was then added to neutrality, chromate of potash, and finally titrated with $\frac{N}{10}$ nitrate of silver. The results of many experiments upon this one sample showed that 100 cc. of peroxide neutralized 0·2 cc. of N soda and consumed 3·4 cc. of $\frac{N}{10}$ nitrate of silver. On the evaporation to dryness of the peroxide by itself a very pungent acid is liberated, and which can be easily told is not hydrochloric. In order to show the moderate stability of peroxide of hydrogen, I have lately had a sample sent me of commercial peroxide which was at least fifteen months old. When treated with bichromate over mercury it gave 7 volumes of oxygen, and I know that no special care, or indeed care of any kind, was bestowed upon the sample.

Having, then, a ready method of testing its contained amount of active material, it remains only for me to show that peroxide of hydrogen is an exceedingly useful oxidizing agent, for it oxidizes by reason of its loosely combined oxygen, and when an excess is added to any substance or to any solution, that excess is readily eliminated, leaving only as a residue that most neutral substance, water.

There are many substances often seen in the laboratories of alkali

works that cannot be readily and accurately examined except by its use; such as the total alkali and crude soda liquors or in black-ash, and certain qualities of soda-ash which contain sulphides or sulphites. In the testing of chamber exits it is extremely useful, inasmuch as sulphurous acid is not an acid easily titrated, for the normal sulphite of an alkali is not neutral to test-paper, and therefore on titrating a sulphite with standard acid the point of neutrality is not clearly defined and distinct. This want of clearness in the ending has been stated by some chemists to be due to the carbonic and nitrous acids present in chamber exits, but add peroxide of hydrogen to the solution and all difficulty vanishes, the sulphurous acid is oxidized to sulphuric, which acid is easily titrated.

I will now proceed to give examples of its use in various methods of analysis. Some samples of soda-ash contain so much sulphite of soda that it is impossible to estimate the amount of alkali accurately by means of standard acid. As an example of this kind of ash I give the following analysis of a sample of ash made from caustic salts, which contained by the acid test in the ordinary way 30 per cent. of alkali without peroxide of hydrogen, whilst the addition of a few cc. brought down the actual percentage to 21. The escaping carbonic acid carries away a great deal of sulphurous acid, but it does not do this if peroxide of hydrogen is present.

Sodium sulphide,	0·098
sulphite,	22·982
sulphate,	2·207
chloride,	33·048
silicate,	1·214
carbonate,	18·704
hydrate,	12·800
Water,	8·747
	99·800

Peroxide of hydrogen is very useful in the analysis of black-ash; a few cc. added to the liquor under examination gives at once the total alkali, which number needs no correction for sulphides, hyposulphites, etc.

This reagent is very useful for many laboratory oxidations, such as the oxidation of iron salts, coloring matters, experiments on bleachings, etc., etc. In fact the applications of this useful substance are

legion. I first commenced to use this reagent for testing vitriol exits it 1873; but its application then was very limited as I had to make my own, and a perfectly pure peroxide of barium is not a very easy thing to make. In those days peroxide of hydrogen was looked upon as a sort of *rara avis*, to be found only in the laboratories of schools of chemistry, and its use was not much extended until a pure peroxide of hydrogen entered the market as a commercial article, to be bought and sold in the same way as other reagents.

Heaton Chapel, May 12, 1879.

—*Chem. News* [Lond.], May 23, 1879.

PREPARATION of AMMONIA-FREE DISTILLED WATER.

By J. S. Thomson.

The method of water analysis as elaborated by Messrs. Wanklyn and Chapman leaves but little to be desired in the matter of simplicity. The only part of the process which is in any degree tedious is the preparation of the ammonia-free water. That such is the case is, I think, clearly shown by the number of suggestions which have from time to time been made with the object of either doing away with distillation in its preparation altogether or of at least securing a larger proportion of the distillate fit for use in the process of analysis than is usually the case. These various processes, although no doubt very ingenious, have never come into general use, chemists still preferring to prepare the water by the original progress, tedious though it be. The process about to be described appears to be free from the objections commonly argued against the earlier ones, and at the same time it has the advantage that the original cost of the necessary apparatus is but small.

The following modification of the distilling apparatus commonly found in laboratories at once provides a simple means of securing a practically unlimited supply of ammonia-free water and at the same time demands little or no attention. The tube which conducts the water vapor from the still or boiler in place of being connected directly with the worm or condenser pipe, is made to enter at the bottom of a large iron drum (say 10 gallons), while the top of the drum is connected with the worm pipe in the ordinary manner. The drum, which is freely exposed to the atmosphere, condenses a portion of the aqueous

vapor, which, falling to the bottom, is kept in a state of ebullition by the free steam blowing through it. Now, if this be drawn off by a suitable tap it will be found to be perfectly free from ammonia, while the ordinary distilled water got at the worm end is teeming with ammonia. With apparatus of the dimensions given above, with a plentiful supply of steam, the ammonia-free water can be collected at the rate of about one gallon per hour.—*Addiewell Chemical Works*, June 30, 1879.

NOTES ON PERFUMERY.

By ALEX. B. LEVI, Ph.G.[1]

Tinctures are made in the following proportions, using in all cases one pint of cologne spirit:

Tincture of Ambergris—Ambergris, ʒii.
Benzoin—Benzoin, ℥iv.
Civet—Civet, ʒii; magnesia carb., ʒii.
Musk—Musk, ʒiii; hot water, ℥viii.
Styrax—Styrax, ℥ii.
Tonquin—Tonqua beans, ℥iv.
Turmeric—Turmeric, ℥ii.
Tolu—Tolu balsam, ℥ii.
Peru—Peru balsam, ℥ii.
Vanilla—Vanilla, ℥ii.
Vetivert—Vetivert root, ℥ii.

The following formulas for compounding the handkerchief extracts have been used for several years and met with much success:

Frangipanni.

Ext Orange-flower, No. 1,	f ℥viii
Rose, No. 2,	f ℥iv
Tinct. Musk,	f ℥i
Vetivert,	f ℥i
Powd. Orris,	ʒii
Oil Santal,	♏xv
Neroli,	♏xv
Rose,	♏viii
Cologne spirit,	f ℥ii
Rose water,	f ℥i

West End.

Ext. Tuberose, No. 1,	℥iv
Jasmin, No. 2,	℥iv
Rose, No. 2,	℥ii
Tinct. Cedar,	℥ii
Tonquin,	℥i
Musk,	℥i
Oil Lemon,	ʒi
Verbena,	ʒss
Neroli,	ʒss
Orange-flower water,	℥ii

[1] The formulas given in this paper differ considerably from those published by Mr. Wm. Saunders ("Am. Jour. Phar.," 1877, p. 184), to whose paper we refer for the preparation of extracts of flowers from *pommades*.—EDITOR AMER. JOUR. PHARMACY.

Essence Bouquet.

Ext. Rose, No. 1,	f ℥viii
Tinct. Musk,	f ℥i
Orris root,[2]	℥ii
Oil Rose,	♏xv
Neroli,	♏xv
Bergamot,	f ℥ss
Lemon,	f ℥ii
Cologne spirit,	f ℥iii
Rose water,	f ℥ii

Geranium.

Ext. Cassie, No. 2,	f ℥viii
Rose, No. 2,	f ℥iii
Tinct. Benzoin,	f ℥ii
Musk,	f ℥ss
Powd. Orris root,	℥ii
Oil Rose Geranium,	℥iii
Rose water,	℥ii
Cologne spirit,	℥i

Night Blooming Cereus.

Ext. Tuberose,	℥iv
Rose, No. 2,	℥iv
Violet, No. 2,	℥ii
Jasmin, No. 2,	℥ii
Tinct. Vanilla,	℥i
Benzoin,	℥ss
Musk,	℥ss
Oil Nutmegs,	♏xv
Santal,	♏xv
Neroli,	♏xv
Almond,	♏viii
Orange flower water,	℥ii

White Rose.

Ext. Rose,	℥viii
No. 2,	℥iv
Tinct. Civet,	℥i
Pulv. Orris,	℥ss
Oil Rose,	♏xv
Rose water,	℥i
Cologne spirit,	℥ii
Ext. Patchouli,	℥ss

Violet.

Ext Violet,	℥vi
Cassie, No. 2,	℥iii
Rose, No. 2,	℥iii
Tuberose, No. 2,	℥ii
Tinct. Ambergris,	℥i
Oil Almond,	♏xv
Rose water,	℥i
Powd. Orris root,	℥ss

Musk.

Tinct. Musk,	℥xii
Civet,	℥i
Ambergris,	℥i
Styrax,	℥i
Vanilla,	℥ss
Rose water,	℥i

Jockey Club.

Ext. Rose,	℥v
Cassie,	℥iv
Orange-flowers,	℥ii
Jasmin,	℥ii
Tinct. Ambergris,	℥i
Musk,	℥i
Oil Bergamot,	℥ii
Rose,	♏xv
Pulv. Orris root,	℥iii
Orange-flower water,	℥ii

Millefleurs.

Ext. Rose,	℥iv
Tuberose,	℥iss
Jasmin,	℥iss
Orange-flower,	℥iss
Cassie,	℥iss
Tinct. Vanilla,	℥i
Ambergris,	℥ss
Musk,	℥ss
Oil Neroli,	♏xv
Bergamot,	♏xxx
Cloves,	♏viii
Almond,	♏vii
Rose water,	℥ii

[2] Instead of orris root, a concentrated tincture of it would seem to be preferable.—Editor.

Jasmin.

Ext. Jasmin,	f ℥vi
Tuberose,	f ℥iii
Jasmin, No. 2,	f ℥vi
Tinct. Musk,	f ℥iss
Civet,	f ℥i
Orange-flower water,	f ℥iii

Musk, 2d.

Bruised Sumbul root,	℥iv
Hot water,	℥iii
Alcohol,	℥vi
Tinct. Ambergris,	℥iii
Vanilla,	℥iii
Rose water,	℥ii

Patchouli.

Ext. Rose, No. 2,	℥iv
Orange-flowers, No. 2,	℥iv
Cologne spirit,	℥vi
Oil Patchouli,	℥iss
Rose,	♏xv
Rose water,	℥ii

New Mown Hay.

Ext. Rose,	f ℥iv
Cassie, No. 2,	℥iv
Orange flowers,	℥ii
Tinct. Tonquin,	℥ii
Vanilla,	℥i
Oil Cedrat,	℥ii
Verbena,	℥ss
Orange-flower water,	℥ii

Heliotrope.

Ext. Rose, No. 1,	f ℥viii
Orange flower, No. 2,	f ℥iv
Tinct. Vanilla,	f ℥i
Civet,	f ℥ss
Ambergris,	℥ss
Oil Almond,	♏xv
Rose water,	f ℥i

Ylang Ylang.

Ext. Jasmin,	℥iv
Rose,	℥iv
Pulv. Orris,	℥iii
Tinct. Civet,	℥ss
Oil Ylang Ylang,	℥ss
Cologne spirit,	℥v
Water,	℥iii

Tuberose.

Ext. Tuberose,	f ℥xii
Tinct. Vanilla,	f ℥i
Rose water,	f ℥ii
Ext. Jasmin,	f ℥ii
Pulv. Orris,	℥ii
Cologne spirit,	f ℥i

Cologne Water.

Oil Neroli,	f ℥iv
Bergamot,	f ℥iv
Lavender,	℥ii
Ext. Jasmin,	℥iiss
Cologne spirit,	Ovi
Water,	Oii

Cologne water made by the formula given, is an agreeable perfume, and has the soothing and cooling properties desirable in such a preparation.

MINUTES OF THE COLLEGE.

PHILADELPHIA, June 30th, 1879.

A stated meeting of the Philadelphia College of Parmacy was held this day at the College Hall. Dillwyn Parrish, President, in the chair; fourteen members in attendance.

The minutes of the last stated meeting, and also those of the adjourned meeting, were read, and on motion, approved.

The minutes of the Board of Trustees for the last three months were read by William C. Bakes, Secretary of the Board, and, on motion, adopted.

By these minutes we are informed of the unanimous election of Samuel P. Sadtler to the Chair of Chemistry in the College, made vacant by the resignation of Prof. Robert Bridges, and of his acceptance of the position. Also that the title of Emeritus Professor of Chemistry had been conferred by the Board on Dr. Robert Bridges.

Mr. Bullock moved that the "Trade Association of Philadelphia Druggists" be tendered the use of the College, under the direction of the Committee on Property, for their meetings, which was unanimously adopted.

A letter from Edward B. Garrigues, acknowledging his gratification at the action of the College in reinstating him in membership, was read and directed to be entered on the minutes.

Elections being in order, the following gentlemen were elected to represent this College at the annual meeting of the American Pharmaceutical Association, which will meet at Indianapolis, Indiana, in September next, viz.: Messrs. Charles W. Hancock, James L. Patterson, Charles C. Spannagel, Alonzo Robbins, Charles L. Eberle; and Messrs John M. Maisch, Joseph P. Remington, Charles Bullock were elected delegates to the Convention of Teaching Pharmaceutical Colleges, which will meet at the same time and place.

Mr. Bullock moved that this meeting proceed to appoint delegates to attend the National Pharmacopœia Convention, which will assemble in the city of Washington, D. C., on the first Wednesday in May, 1880, which motion was unanimously adopted, and the President was requested to select the delegates. The following gentlemen were appointed by him to the service, viz.: Prof. John M. Maisch, Mr. Alfred B. Taylor, Prof. Joseph P. Remington.

No further business being presented, then, on motion, adjourned.

WILLIAM J. JENKS, *Secretary.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

Changes in Colleges of Pharmacy.—The following changes in the faculties and location of the various colleges of pharmacy have been brought to our notice:

Chicago College of Pharmacy.—Prof. Mill has retired from the chair of pharmacy, and Prof G M. Hambright has been elected in his place. Prof. Hambright formerly occupied the chair of materia medica in the same college.

Cincinnati College of Pharmacy.—The lectures will be delivered in the new lecture rooms, corner of Fifth and John streets, which were built expressly for the college.

Maryland College of Pharmacy—The chair of botany and materia medica, made vacant by resignation, has been filled by transferring to it Prof. J. Faris Moore, and the chair of pharmacy thus vacated, by the election of Mr. Chas. Caspari, Jr., as professor of that branch.

Massachusetts College of Pharmacy.—The vacancy created by the death of Prof. Merrick has been filled by transferring to the chair of chemistry Prof. Geo. F. H. Markoe, and by electing in his place Mr. Edgar L. Patch professor of pharmacy.

New York College of Pharmacy.—During the coming session the lectures will, for the first time, be held in the building 209 and 211 East Twenty-third street, which has recently been purchased by the college. During the past spring and summer Prof. Alphonso Wood delivered in this college a course of 13 lectures on practical botany. The trustees have decided to bestow in each session two free scholarships

for the senior class, admission to be gained through competitive examination in general and professional subjects.

Philadelphia College of Pharmacy.—As previously announced, Prof. Samuel P. Sadtler has been elected to the chair of chemistry, vacated through the resignation of Prof. Bridges, who, as emeritus professor of chemistry, will continue his connection with the college, in which he became professor in 1842. To the Peter Williamson scholarship, instituted some years ago, have recently been added two Robt. Bridges scholarships.

Pittsburg College of Pharmacy —This institution has recently removed to new and conveniently located quarters. The election of Prof. H. G. Debrunner to the chair of chemistry, in place of Prof. Phillips, resigned, has been announced before.

St. Louis College of Pharmacy.—Hereafter two courses—one to the juniors, the other to the seniors—will be delivered, and admission to the latter will be gained only by passing the junior examination in every branch taught. The laboratory practice, inaugurated last year, will be continued under Prof Curtman in chemistry, and Prof. Good in pharmacy.

We have not learned of any changes introduced in the remaining colleges of pharmacy during the past spring and summer.

Rock County (Wis.) Pharmaceutical Society.—This society, organized in June, held a meeting last month at the Taylor House, Clinton Junction, the attendance being better than expected. A number of members were elected and reports read from the Treasurer and the various committees, that on the drug market offering suggestions as to its better regulations.

Mr. Fenton, of Beloit, gave an account of his manner of making suppositories; Mr. Heimstreet, of Janesville, read a paper on the fluctuations of leading articles of the drug market during the past ten years, and Mr. Ruyden, of Rockton, Ill., discussed the duties of the pharmacist. Attention was drawn to the difference in size and color of sugar-coated calomel pills and some discussion had on the subject.

The Committee on Papers and Queries offered a number of queries on practical subjects, which were accepted by different members, and the Committee on Exhibits made a report on the articles placed on exhibition, which filled three rooms and were tastefully arranged by the Local Secretary, O. E. Woodward, of Clinton.

The Secretary laid before the meeting a number of letters, among them correspondence from the South Carolina and Pennsylvania Pharmaceutical Associations.

A resolution condemning the payment of commissions to physicians on prescriptions was passed receiving the unanimous vote of those present.

The association elected as Local Secretary Mr F. F. Prentice, of Janesville, at which place the next meeting will be held, October 15th.

Messrs. E. B. Heimstreet and F. F. Prentice, of Janesville, and A. H. Hollister, of Madison, were appointed delegates to the next meeting of the American Pharmaceutical Association.

In October next an effort will be made to form a State pharmaceutical association for Wisconsin.

EDITORIAL DEPARTMENT.

The twenty-seventh annual meeting of the American Pharmaceutical Association will be held in Indianapolis commencing September 9th, and will be the first meeting west of the Alleghany Mountains since 1874, when the Association met at Louisville, Ky. It is quite natural, therefore, that a lively interest should be felt in the approaching meeting, more particularly among the druggists and pharmacists of the West, and from the accounts thus far received, there is a fair prospect of a large gathering. Since questions of vital importance are to be discussed it is to be hoped that as many of the members as can make it convenient will endeavor to be present, and in the meantime familiarize themselves with the subject matter of the questions that are to be solved, so that the unavoidable discussions thereon may not be unnecessarily prolonged to the exclusion of other matters. The more important subjects claiming attention have been specially alluded to in the last volume of Proceedings, and there is none perhaps of greater importance than the financial question. With a membership of over eleven hundred there should be no difficulty of meeting the running expenses of the Association, which amount annually to about $5,000. A considerable number of the members, however, neglect to meet their obligations towards the Association, and as a consequence, it has become necessary to meet the liabilities of one year in part with the income from the next, a state of affairs which would not exist if all members would promptly pay their dues, and to remedy which requires the calm counsel of all interested in the welfare of the Association. The third session of the coming meeting has been designated for the discussion of the plan which has been elaborated by the committee, appointed in 1877, and reported last year at Atlanta.

Considering the large number of those who are eligible to membership under the constitution and by-laws, there is undoubtedly room for increasing very largely the influence and usefulness of the Association by inducing those who have not connected themselves with it to become members. An additional advantage would result to the Association in the removal of all financial difficulties, and in the prospect of reducing, in a short time, the amount of the annual contribution. An increase of membership to nearly twice the present number would double the annual income of the Association, while at the same time the current expenses would not be increased to beyond twenty per cent. of the present amount; obviously a revenue would be attained larger than necessary to meet the expenditures, and the dues might be correspondingly reduced.

Another important measure requiring the action of the Association is the securing of the Centennial fund for the purpose of aiding original investigations. When the presentation was made at Toronto, coupled with the condition that within a year the members of the Association should raise a like amount ($525), those present at the time made their contributions towards this end, and were sanguine that a much

larger amount would be secured, considering the number of members; but it seems that the importance of having such a special fund for the purpose indicated has not been sufficiently weighed by the members generally, since the responses have been very few, according to the information received from the committee.

While thus questions of importance are presented bearing on the future welfare and usefulness of the Association, there is every reason to believe that also, in other respects, the next meeting will be of more than usual interest. The exhibitions connected with the meetings are gradually assuming that aspect which they should have, in order to enlist every year the interest and attention of those present. Preparations, which every pharmacist is expected to make for his own use, are beginning to be exhibited more frequently than formerly, as samples of pharmaceutical skill, while crude drugs and the products of large industrial pursuits are largely taking the place of the so-called pharmaceutical specialties. The next exhibition promises to present many features which will enlist the attention of those present.

The scientific interest of the meeting will undoubtedly be divided between the exhibition and the essays and reports on subjects of scientific and practical importance. Members who have accepted queries for investigation, and others who desire to present volunteer papers, are urged to send them, when ready, either to the Permanent Secretary or to the Local Secretary, Mr. Eli Lilly, at Indianapolis, either of whom will take them in charge for the action of the proper committee.

The sessions and the exhibition will be held in Masonic Hall, and the headquarters of the members during the meeting will be at the Grand Hotel, where accommodations have been secured at the rate of $2 per day, or with special conveniences at $2.50. The headquarters are located in the immediate neighborhood of the place of meeting, as are also two other leading hotels, of which the Bates House will accommodate members and their families at $2 per day, and the Occidental Hotel at $1.50 per day.

The Local Secretary, Mr. Lilly, and the Chairman of the Railroad Committee, Mr. J. W. Bryan, have been diligently engaged in securing reduced fares for the attending members and their families. The following is a synopsis of the reductions which have thus far been secured.

From Texas, *via* Missouri, Kansas and Texas Railroad, to Indianapolis and return, *one and one-fifth fare*, on certificate from Mr. L. Myers Connor, Dallas, Texas.

Full fare one way, and return free on certificate of Local Secretary, from any point of their lines:

St. Louis, Vandalia, Terre Haute and Indianapolis Railroad (Vandalia line).

Indianapolis and St. Louis Railroad.

Evansville and Terre Haute Railroad.

Louisville and Indianapolis Railroad.

South Carolina Railroad (Charleston and Augusta).

Full fare (or 3 cents per mile) going, and 1 cent (or one-third fare) returning on certificate of attendance from Local Secretary:

C. C. C. & I. Railroad (bee line); Indianapolis, Peru and Chicago Railroad.

Cincinnati, Hamilton and Indianapolis Railroad; Louisville and Great Southern. Louisville, Cincinnati and Lexington Railroad.

Round trip excursion tickets to be obtained only upon previous application to and order from Local Secretary, Mr. Eli Lilly:

Canada Southern Railroad, and Grand Trunk Railway, of Canada, one and one-third fare.

Pittsburg, Cincinnati and St. Louis (Pan Handle) Railroad, and Indianapolis, Bloomington and Western Railroad, 4 cents per mile one way.

Mobile and Montgomery Railroad, and Indianapolis, Cincinnati and La Fayette Railroad, one and one-fifth fare.

Other arrangements with Southern and Western railroads are contemplated, but not yet perfected in detail. Similar reductions will be secured for delegates and members with their families coming from east of the Alleghanies. Full particulars will be given by the circular of the Permanent Secretary to be issued during the present month. In the meantime we would request members residing east of the Alleghanies who contemplate visiting Indianapolis to inform the Permanent Secretary of their intention, and all who have suitable articles for exhibition to correspond without delay with the Local Secretary, in order to secure the requisite space.

State Pharmaceutical Associations.—Two months ago a State Pharmaceutical Association was organized in Texas, of which Mr. L. M. Connor, of Dallas, was elected president.

The State of Ohio will likewise soon have a similar organization, a numerously-signed call for the initiatory meeting having been issued. The meeting will be held at the city of Columbus on September 2d, and promises to be largely attended. Both of these new associations will most likely be represented by delegates at the meeting of the National Association at Indianapolis.

As stated elsewhere, a Pharmaceutical Association for Wisconsin will probably be organized in October next.

Pharmacy Law of Brooklyn.—"An act governing the sale of drugs and poisons in the county of Kings, State of New York," is the title of the law which received the Governor's sanction June 12th. It is modeled after the law applying to the city of New York, enacted in 1872, and differs chiefly from the latter in requiring from graduates in medicine applying for registration a practical experience of at least four years, in stores where prescriptions of medical practitioners have been compounded; in permitting the registration of persons having had, *at the time* of the passage of the act, ten years' practical experience in the preparation of physicians' prescriptions, and for licentiates in pharmacy in recognizing the certificate of examination passed before *any other* recognized board of pharmacy. The Local Board of Pharmacy is to consist of five members, of whom the Pharmaceutical and the Medical Society of the county of Kings each elect two members, and the fifth is chosen by the joint ballot of the four. Besides the usual functions (examination and registration) the board is invested with the important duty of "examining into and adjudicating upon all cases of alleged abuse, fraud, malpractice or incompetence, and it shall be competent for the said board, by a vote of three-fifths of its members, to

suspend or revoke the registration of any practicing pharmacist, after due notice and trial before said board." This provision appears for the first time in a pharmacy law. Sec 11 makes it the duty of the district attorney of the county to prosecute any and all violations of the act.

The Board has been constituted as follows: G. M. Baker, M.D. (President), and G. A. Newman, from the Pharmaceutical Society; J. D. Rushmore, M.D., and Audley Haslett, M.D., from the Medical Society; and L. E. Nicot, elected on joint ballot. Mr. Nicot is the President of the Kings County Pharmaceutical Society, and on July 21st was appointed Secretary of the Pharmacy Board.

The Potato-bug.—In Mr. Fahnestock's paper, published on page 296 of our June number, it is stated that Cantharis vittata, the potato-bug, yielded from 150 grains of the powder two grains of almost pure cantharidin. A medical journal, in quoting these results, remarks: "This is a large product, and no doubt these pests will be increasingly used as a cheap source of this valuable remedy." Our cotemporary is evidently under the impression that the above results refer to the *Colorado* potato-bug, Doryphora decemlineata, which, however, does not contain any cantharidin, according to the observations of Mr. L. Dembinski (see "Amer. Journ. Pharm.," 1877, p. 550). It is also worthy of notice that Mr. Fahnestock's results of 1⅛ per cent. of cantharidin, are considerably larger than those obtained by Mr. Wm. R. Warner ("Amer. Journ. Pharm.," 1856, p. 195), whose yield from Cantharis vittata was only 0·40 per cent.; the difference in the result is doubtless due, at least partly, to the methods of assaying.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Memoranda on Poisons. By Thomas H. Tanner, M.D., F.L.S. Fourth American from the last London enlarged and revised edition. Philadelphia: Lindsay & Blakiston, 1879. 16mo, pp. 201. Price, cloth, 75 cents.

On a former occasion we have called attention to the usefulness of this little work, which in the present edition has been considerably enlarged. The general plan of the work remains unchanged, but much new matter has been added, and the more recent observations have been utilized and incorporated, so that in its present shape it will prove to be even more useful than heretofore, both to the practitioner and the student of medicine.

Pocket Therapeutics and Dose Book, etc. By Morse Stewart, Jr., B A., M.D. Second edition. Detroit, Mich.: George D. Stewart, 1878. Price, cloth, $1.

It is stated on the title-page that the book contains a classification and explanation of the action of medicines; the minimum and maximum doses in troy weights with their equivalents in the metric weights; index and definition of diseases with their appropriate remedies; genitive endings of all medicines and preparations given in italics; index of common and pharmaceutical names; classification of symptoms; poisons and their antidotes. The dose book is small enough to be carried in

the vest pocket, and is therefore very convenient for those who feel the need of such a companion for the purpose of refreshing their memory.

The Druggist's Cost Book. By John H. Nelson, author of the "Druggist's Handbook of Private Formulas." Cleveland, O.: J. B. Savage, printer, 1879. 8vo. Price, in leather, $3.50.

This is a cost book indexed on the margin for convenient reference, and divided into five parts, comprising medicines proper, paints etc., liquors, patent medicines and sundries. In each part the articles are arranged in alphabetical order, blank space being left for the new articles not enumerated; the remainder of the page is ruled, the spaces being intended for notes as to price, etc. The object is the saving of trouble to the druggist in arranging such a useful memorandum book.

The receipt of the following pamphlets and reprints is acknowledged:

Untersuchung des Wassers der Mineralquelle zu Rosheim im Elsass. Von Fred. B. Power.

Analysis of the Mineral Water of Rosheim, Alsace.

Riduzione del Cloralio.

Riduzione del Cloruro di argento e del cloruro ferrico.

Azione dei raggi solari sui composti aloidi d'argento.

Riduzione dei Chlorati in Cloruri senza l'intervento del preteso stata nascente dell' idrogeno.

Réduction du Chlorate de Potasse.

These essays by Dr. Donato Tommasi, of Florence, Italy, treat of the reduction of chlorates, chloral, and of chlorides and other halogen compounds, under the influence of light and of chemical agents.

The Mongumo Bark Imported from Madagascar. By Prof. Dragendorff.

Nachweisbarkeit des Strychnins in verwesenden Cadavern (Detection of Strychnia in Corpses). By Prof. Dragendorff.

Chinincitrater (Citrate of Quinia). By K. F. Mandelin, Joensuu, Finland.

Die Borcitronensäure und ihre Salze (Borocitric acid and its Salts). By Edmund Scheibe.

Analysis of Rhubarb. By Henry G. Greenish.

Action of Iodine upon Rhubarb. By Henry G Greenish.

These essays contain the results of investigations made in the Pharmaceutical Institute of Dorpat, Russia.

American Nervousness, its Philosophy and Treatment. By Geo. M. Beard, M.D.

From the "Virginia Medical Monthly," July.

Neurility; Correlated, Converted Physical Forces. By S. V. Clevenger, M.D.

The Demand for a Woman's Medical College in the West. By Chas. W. Earle, M.D. An Address delivered at the Commencement of the Seventh Course of the Woman's Medical College, Chicago, Ill.